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Rhodora

JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 14. June, 1912. No. 162

RHODODENDRON CAROLINIANUM, A NEW RHODODENDRON FROM NORTH CAROLINA.

By Alfred Rehder.

For a year we have cultivated at the Arnold Arboretum a Rhododendron which was received from the nurseries of Harland P. Kelsey of Highlands, North Carolina, under the name *Rhododendron punctatum*. Growing side by side with the *R. punctatum* Andrews brought over from the Botanic Garden in Cambridge where it was introduced from the South about 60 years ago probably by Asa Gray, the two plants present marked differences at the first glance. The plant from North Carolina forms a low compact bush with broad leaves, flowering after the middle of May before the development of the shoots of the year, while the other plant which agrees exactly with the form figured by Andrews and cultivated formerly in European gardens,[1] is a taller loose-growing shrub with narrower leaves, and it flowers about four weeks later, when the young shoots springing from below the inflorescence are already developed and overtop it. Generally the differences as regards habit, shape of the leaves, time of flowering and also the shape of the corolla are about the same as those between *R. catawbiense* and *R. maximum*, only in a lesser degree. In examining the available herbarium material I find that both forms are native to the southern Atlantic States; the low compact form being apparently restricted to the high mountains of North Carolina, while the other form inhabits lower altitudes and has a wider distribution.

[1] The plant now in cultivation in Europe as *R. punctatum* seems to be a hybrid between *R. punctatum* and *R. ferrugineum*.

The Rhododendron generally known as *R. punctatum*, was discovered in 1788 by Michaux on the banks of the Savannah River and in 1792 briefly described under the name *R. minus* (in Jour. d'Hist. Nat. I. 412) in the following words: "Rhododendron minus, foliis minoribus ellipticis petiolatis subferrugineis. Se trouve sur les rives de la rivière de Savannah." Though the description is rather short, the species is sufficiently characterized, particularly by the description of the leaves as subferrugineous, since the two other species of the Atlantic States known to Michaux, *R. maximum* and *R. catawbiense*, have perfectly glabrous foliage. There can be, therefore, hardly any doubt what Michaux meant, and his name being six years older than Andrews' *R. punctatum* based on cultivated specimens introduced about 1786 by John Fraser, must be considered the valid name for this species. Both names refer to the same form, namely to the form of the lower altitudes; for this is the form represented by the plate accompanying Andrews' description, and in regard to Michaux's species the locality quoted with the first description leaves no doubt. The identity of the two species is also confirmed by Michaux's original specimens which I had the opportunity of examining last year; of the three sheets two are without labels and one has two labels; all contain the form of the lower altitudes, partly in flowering specimens, and only the sheet with two labels contains besides these specimens two branchlets of the form of the higher mountains in fruit; to these two specimens belongs apparently the label reading "hautes montagnes de Caroline septentrionale" while the label reading "aux sources de la rivière Savannah" belongs to the other specimens and corresponds to the locality given in the first description: in his Flora he quotes both localities, but the description is based also here chiefly on the form from the lower level, as he had no flowering material of the other shrub.

The first to recognize the form of the higher mountains as distinct was Ker when he figured it in 1815 as *Rhododendron punctatum* β in the Botanical Register. He states there that it was only lately introduced from North Carolina by John Fraser who also had introduced the typical *R. punctatum*. This form, however, seems to have been subsequently lost to cultivation, as it is never mentioned again in horticultural or botanical literature. All later references and descriptions apply only to the other form, until in 1902 Small distinguished the two forms as species, but unfortunately he identified

the form of the higher mountains with *R. punctatum* and gave a new name, *R. Cuthberti*, to the true *R. minus*. It is, however, the form of the higher mountains which is in need of a name, if the two forms are considered distinct species, and I propose *Rhododendron carolinianum* as a fitting name, because it seems to be restricted to North Carolina, while the other species ranges farther south.

Rhododendron **carolinianum** Rehder, n. sp. *Rhododendron punctatum* β Ker, Bot. Reg. I. t. 37. 1815. *R. punctatum* Small, Fl. Southeast. U. S. 884. 1903 (non Andrews). Frutex ramis crassiusculis; ramuli novelli virides v. purpurascentes, squamis ferrugineis laxe conspersi; gemmae floriferae ovoideae, acutae, circiter 1 cm. longae, perulis 7–9 late ovatis acuminulatis dense minuteque albofimbriatis extus ferrugineo-lepidotis, gemmae foliiferae multo minores et angustiores. Folia coriacea, ovalia v. elliptica v. anguste elliptica, basi late cuneata, apice acutiuscula v. in acumen breve contracta, 5–8 cm. longa et 2.5–4 cm. lata, supra initio lepidota, mox glabra, subnitentia, intense luteo-viridia, subtus pallidiora, dense v. interdum sparsius ferrugineo-lepidota, margine leviter revoluta, nervis utrinsecus circiter 8 obsoletis, costa media supra vix, subtus manifeste elevata; petioli robusti, circiter 1 cm. longi, ferrugineo-lepidoti. Flores 4–9 in racemo umbellato terminali, sub anthesi innovationibus vix evolutis; pedicelli 1–1.5 cm. longi, lepidoti; sepala semiorbicularia v. lata ovata, 1 mm. longa, trientem ovarii vix aequantia, extus et ad marginem lepidota; corolla rotato-campanulata, 2.5 cm. longa et 3.5–4 cm. diam., lobis late ovatis margine planis apice rotundatis tubum brevem e basi sensim ampliatum subaequantibus v. eo paullo longioribus, pallide roseo-purpurea v. rarius albida, maculis destituta v. interdum sparse maculata, extus glabra v. sparsissime lepidota; stamina 10, inaequalia, corolla paullo breviora, filamentis basi villosis, antheris pallidis; stylus glaber, staminibus paullo brevior, purpureus; ovarium conico-oblongum, dense albido-lepidota. Capsula anguste oblonga, 8–12 mm. longa et 3–4 mm. crassa, fusca.

Low compact shrub with thickish branches; young branchlets greenish or purplish lepidote; floriferous winter-buds ovoid, acute, about 1 cm. long, with 7–9 broadly ovate scales mucronate and densely white-ciliolate, outside lepidote. Leaves coriaceous, oval or elliptic to elliptic-oblong, broadly cuneate at the base, acutish at the apex or shortly acuminate, 5–8 cm. long and 2.5–4 cm. broad, above at first lepidote, soon becoming glabrous, somewhat lustrous, deep yellowish green, paler beneath and densely or sometimes more sparsely lepidote, slightly revolute at the margin, with about 8 pairs of obscure veins, midrib above slightly, beneath strongly elevated. Flowers 4–9 in dense umbel-like terminal racemes, the young shoots at the flowering time scarcely developed; pedicels 1–1.5 cm. long, lepidote; sepals semiorbicular or broadly ovate, scarcely one third as long as

the ovary, outside and on the margin lepidote; corolla rotate-campanulate, 2.5 cm. long and 3.5–4 cm. wide, pale rosy-purple or rarely whitish, without spots or only slightly spotted, outside glabrous or very sparingly lepidote, the lobes broadly ovate, about as long or slightly longer than the short gradually widened tube; stamens 10, slightly shorter than the corolla, with the filaments villous at the base and with pale-colored anthers; style glabrous, slightly shorter than the stamens, purple; ovary conic-oblong, lepidote. Capsule narrow oblong, 8–12 mm. long and 3–4 mm. thick, brown.

North Carolina: Tyron, April 20, 1897 (Biltmore Herb. No. 4463); Roan Mtn., June 16, 1879 (*A. Gray, C. S. Sargent, J. H. Redfield & Wm. W. Canby*); Table Rock Mtn., Burke Co., July 2, 1890, *J. K. Small & A. A. Heller* (No. 281, in part, the specimens in fruit); Macon Co., (*T. G. Harbison*, Nos. 119, 168); cultivated at Highlands, from Linville Mtn., May 20, 1911, (*T. G. Harbison*, No. 626); without precise locality, 1889 (*F. Boynton*).— At one time this species seems to have been cultivated in the Botanic Garden at Cambridge, for there is a specimen in the Gray Herbarium collected by C. E. Faxon, and dated June 18, without indication of the year, but probably collected about 1870.

Rhododendron carolinianum is easily distinguished from *R. minus* by the short and wide tube of the corolla as long as, or slightly shorter than the lobes; the corolla is usually not spotted and is glabrous outside, the leaves are generally broader, less pointed and of thicker texture, the branches are shorter and stouter forming a compact, usually low shrub and the flowers appear several weeks earlier, before the young leaves are out. As an ornamental plant it is superior to *R. minus* and has proved perfectly hardy at the Arnold Arboretum and in General Weld's garden at Dedham where a large number of plants have been established for several years.

Small gives for his *R. punctatum*, which, according to his description, is identical with this species, a distribution ranging from North Carolina to Tennessee, Georgia and Alabama, but I have seen it so far only from North Carolina.

Rhododendron minus Michaux, Jour. d'Hist. Nat. I. 412. 1792, and Fl. Bor. Am. I. 258. 1803; Persoon, Syn. Pl. I. 478. 1805. *Rhododendron punctatum* Andrews, Bot. Rep. I. t. 36. 1798; Donn, Hort. Cantabr. 49. 1786 (nomen nudum); Pursh, Fl. Am. Sept. I. 298. 1814; Willdenow, Sp. Pl. II. 607. 1799; Ventenat, Descr. Jard. Cels. t. 15. 1800; Aiton, Hort. Kew. ed. 2, III. 51. 1811; Sims, Bot. Mag. XLIX. t. 2285. 1822; Watson, Dendr. Brit. t. 162 A. 1825; Chapman, Fl. South. U. S. 266. 1860; Gray, Syn. Fl. N. Am. II. 1, 42. 1878. *Rhododendron Cuthberti* Small, Torreya, II. 9. 1902, and Fl. Southeast. U. S. 885. 1903.

GEORGIA: Banks of the Savannah River (*A. Michaux*, in Herb. Mus. Paris, type); near Augusta, *S. T. Olney & J. Metcalf* (no. 123); river bank at Locks, near Augusta, May 16, 1901, (*A. Cuthbert*, type of *R. Cuthberti*); same locality, March 30, 1908, (*C. S. Sargent*); two miles northwest of Cuthbert, Randolph Co., July 21, 1903 (*R. M. Harper*, No. 1895); north slope of Pine Mtn. near Flint River, Meriwether Co., June 9, 1910 (*R. M. Harper*, No. 2261); dry rocky ridges, Banks Co., Sept. 24, 1910, (*T. G. Harbison*, No. 155); Hull Co., near Cornelin, May 17, 1911 (*T. G. Harbison*, No. 609). NORTH CAROLINA: Table Rock Mtn., Burke Co., *J. K. Small & A. A. Heller*, July 2, 1891 (No. 281, in part, the specimens in flower). ALABAMA: Sulphur Mtns. near Tulledaga Springs, May 15, 1911, (*T. G. Harbison*, No. 591); bank of Chestnut Creek, below Verbena, Chilton Co., Feb. 2, 1906, *R. M. Harper* (No. 26).

Rhododendron minus is chiefly distinguished from *R. carolinianum* by the longer cylindric corolla-tube which is longer than the lobes, by the corolla being lepidote outside and the upper lobe being distinctly spotted. The habit of the plant is much looser and more straggling with longer and slenderer branches and the leaves are larger and comparatively narrower and more pointed.

The type locality of *Rhododendron minus* seems to be the same as that given for *R. Cuthberti*, for Michaux mentions in his Journal under the entry for November 11, 1788, among the plants observed near Augusta, Georgia, on the banks of the Savannah River an unnamed Rhododendron and again under December 4 he records in the vicinity of Seneca (Oconee Co.) a Rhododendron *species nova* which is without doubt the same. As Michaux refers the deciduous Rhododendrons to *Azalea*, the only other species of Rhododendron growing in this region is *R. maximum* with which Michaux of course was perfectly familiar; the unknown species therefore could not have been any other than *R. minus*. As Michaux in his first description of *R. minus* does not mention the flowers and as he states that it grows on the banks of the river Savannah, it is most likely that his description is based on the specimens collected in November, 1788, near Augusta.

The leaves of the plant cultivated in Europe as *R. punctatum* are generally somewhat smaller and narrower than those of the wild specimens from Georgia, but in the shape of the corolla both plants agree perfectly.

In Banks County, Mr. T. G. Harbison has collected a form of *Rhododendron minus* with considerably larger flowers, which seems worthy of being introduced into cultivation on account of its much more

showy flowers. Though it can hardly be considered a botanical variety, it seems advisable to give it a distinct name.

Rhododendron minus f. **Harbisonii**, forma nova.

A type differt floribus majoribus, 3.3–4 cm. longis in racemis circiter 10–floris, sepalis inaequalibus majoribus ovatis longe ciliatis.

Georgia: Banks Co., May 18, 1911, *T. G. Harbison* (Nos. 615, 616 in Herb. Arnold Arboretum).

This differs from the typical form which has the flowers 2.5–3 cm. long and the racemes generally 7–8-flowered, in the larger flowers and larger racemes; also the leaves are somewhat larger, attaining 11 cm. in length. In its large flowers and denser flower-clusters it resembles *R. Chapmanii* Gray, but that species has smaller obtuse or acute, not acuminate leaves very densely lepidote beneath and revolute at the margin.

Arnold Arboretum.

THE FORMS OF PELTANDRA VIRGINICA.

Sidney F. Blake.

Plate 94.

In 1836 Rafinesque, in the New Flora of North America, part 1, pp. 85–89, elaborated his previous treatment of the genus *Peltandra* into a monograph in which eight species were described, founded principally on differences in leaf outline,[1] although the number of seeds and some supposed diagnostic characters from petiole, scape, and spathe were also employed. Of Rafinesque's species two were recently taken up as varieties by Mr. Ivar Tidestrom,[2] on the basis of field study of the plants in Maryland and Virginia. My collection last fall of one or two forms obviously distinct from any of these has led to a study of Rafinesque's monograph in connection with the material in the Gray Herbarium, the herbaria of the New England Botanical Club and the Boston Society of Natural History, and a

[1] Except *P. alba* Raf. (= *P. sagittifolia* (Mx.) Raf.), type of the subgenus *Leucospatha* Raf.

[2] Rhodora **12**:47–50, pl. 83 (March, 1910).

small amount in my own herbarium, in which it has been possible to distinguish seven forms, differing from each other apparently in leaf characters only.

The forms, in their range of variation strongly suggestive of those of *Sagittaria latifolia*, fall naturally into three groups: one group of three forms with broad leaves with short and broad basal lobes or ears, another of two forms having narrower, more acute leaves with longer, narrower ears, and a third composed of two forms with lanceolate acuminate leaves having very short unequal ears or none at all. The two plants treated of by Tidestrom as var. *heterophylla* (Raf.) Tidestrom and var. *angustifolia* (Raf.) Tidestrom make up this last and most aberrant group, with lance-oblong or narrowly lanceolate, acuminate leaves tapering or rounded or very shortly and equally eared at base. These two plants, Rafinesque's *P. heterophyla* [1] and *P. angustifolia*, although very close to one another and undoubtedly intergrading, may perhaps be maintained as distinct formae.

From *Peltandra heterophyla* a few apparently transitional specimens lead to the second pair of formae, possessing distinct but narrow basal lobes, and differing among themselves in size of leaf and development of the ears. One of these, a form with pointed generally narrow leaves and elongated usually divergent basal lobes often twice as long as the breadth of leaf, may possibly be the same as *P. hastata* Raf., with "leaves equal in length oblong, hastate cordate acuminate, lobes subacute"; the probability of this has not however seemed to me sufficient to justify the adoption of the name. Rafinesque remarks that his plant has several seeds, hence, "is a Leucospatha like the next," which is *P. alba* Raf. (now called *P. sagittifolia* (Mx.) Raf.), the type of the well distinguished subgenus *Leucospatha* Raf., and a plant to whose normal leaves the description just quoted well applies. *Arum virginicum* as understood by Elliott, considered by Rafinesque identical with his *P. hastata*, is not by Elliott's description to be distinguished from plants of the ordinary form with hastate basal lobes.

The third group, comprising two forms beside the type of the species, is distinguished from the last by its broad leaves with distinct but short and broad ears. The most extreme of these, a form with very broad leaves nearly equilaterally triangular, and with obtuse or often subacute basal lobes, seems to be identical with Rafinesque's *P.*

[1] This orthography was apparently always employed by Rafinesque in the numerous cases where this name was applied to new "species" in the "New Flora."

latifolia with "leaves broad triangular sagittate,....often one foot long and broad." Of the two forms with more elliptical leaf outline, one, represented by a single sheet from Delaware collected by Commons, has broad leaves with a rounded tip and broadly rounded ears nearly or quite closing the sinus. The other form, which, following Tidestrom, is here taken as the type of the species, has a narrower more acute leaf with narrower deltoid ears.

The absence of a distinct geographical range, or even of a difference in habitat,[1] in the case of any of the forms, coupled with the fact that the differences are purely foliar and that intergrades are frequent, has led me to rank these plants as formae rather than varieties.

In the following synopsis I have arranged the forms after what seem to be their natural affiliations.

* Leaves broad ((3)7–17.5 cm. wide), with distinct basal lobes 2–13 cm. long.
+ Leaves with blade[2] (10)14–22 cm. long, 8–17.5 cm. wide; basal lobes broad (3–7.5 cm. wide), short, nearly always less than width of blade, deltoid to deltoid-lanceolate, or rounded.
++ Leaves very broad, almost equilaterally triangular, 18.5–28 cm. across the tips of the ears, these obtuse or subacute, $\frac{3}{4}$ as long as main blade; sinus open.

1. PELTANDRA VIRGINICA (L.) Kunth f. **latifolia** (Raf.) n. comb. *P. latifolia* Raf. l. c. 87. "South New Jersey and Delaware," Rafinesque. Specimens examined: MASSACHUSETTS: North Cambridge, July 15, 1890 (*Sereno Watson*). DELAWARE: Wilmington, June 2, 1890 (*A. Commons*).

++ ++ Leaves elliptical or elliptical-oblong, not equilateral (11–20 cm. between tips of the ears).
= Leaves broad and rounded (blade 16–19.5 cm. long, 16.5–17.5 cm. wide); basal lobes broadly rounded, scarcely or not projecting at sides of leaf, $\frac{1}{2}$ as long as the blade; sinus nearly or quite closed.

2. P. VIRGINICA f. **rotundata**, n. forma.[3] TYPE SHEET (in Gray Herb.): DELAWARE: Wilmington, June 2, 1890 (*A. Commons*).

= = Leaves more oblong (blade (10)14–22 cm. long, 8–17 wide); basal lobes obtuse, usually narrowed toward the tip, $\frac{1}{4}$–$\frac{1}{2}$ the length of blade, usually somewhat diverging; sinus open.

3. P. VIRGINICA (typical form). *P. undulata* Raf., *P. canadensis* Raf., l. c. 87. Typical specimens examined: MAINE: Livermore

[1] Mr. Tidestrom found var. *angustifolia* growing with the type at Nanjemoy Creek, Maryland; Dr. B. L. Robinson collected two forms under his number 161 at East Jaffrey, New Hampshire; and I found three forms growing in a Sphagnum bog in Canton, two about a pond in West Stoughton, and two in a ditch in woods in Norwood, Massachusetts.

[2] Blade is measured from top of petiole to tip of leaf.

[3] P. VIRGINICA f. **rotundata**, n. forma, foliis rotundatis, lamina (vide supra) 16–19.5 cm. longa, 16.5–17.5 cm. lata; lobis basilariis late rotundatis, vix aut omnino non divergentibus, dimidio longis lamina; sinu prope vel ex toto clauso.

Falls, 1878 (*Miss Furbish*); Brunswick, 1882 (*Miss Furbish*); Spruce Pond, Cornish, July, 1900 (*A. H. Norton*). New Hampshire: E. Jaffrey, 8 July, 1897 (*B. L. Robinson* 161 part). Massachusetts: Beaver Brook Reservation, May 26, 1894 (*W. H. Manning*); Stony Brook Reservation, June 17, 1895 (*G. L. Chandler*); damp ground near pond, West Stoughton, 23 Sept., 1911 (*Blake* 3378); Sphagnum bog, Canton, 13 Sept., 1911 (*Blake* 3325); ditch in woods, Norwood, 12 Oct., 1911 (*Blake* 3440). Delaware: Wilmington, June 2, 1890 (*A. Commons*). Maryland: Marshall Hall, July 23, 1890 (*J. N. Rose*) and June 23, 1905 (*Ivar Tidestrom*); swamp along Potomac River, near Chainbridge, above Washington, July, 1904 (*Ivar Tidestrom*). District of Columbia: Washington, river swamp, May 29, 1896 (*E. S. Steele*). Florida: Miami River, Feb. 5, 1892 (*J. H. Simpson*); swamps in water, vicinity of Eustis, Lake Co., April 15–30, 1894 (*G. V. Nash* 453).

← ← Leaves comparatively narrow, 6–12 cm. broad, acute to acuminate; basal lobes longer (mostly one to two times the breadth of blade), narrow (1–3.5 cm. broad near the middle), mostly lanceolate or linear lanceolate in outline.

↔ Leaves larger and broader (main blade 10.5–23.5 cm. long, 6–12 cm. broad;) basal lobes longer, (5)7–13 cm. long, often twice the breadth of leaf, widely divaricate.

4. P. virginica f. **hastifolia**, n. forma.[1] *?P. hastata* Raf. Type sheet No. 4530, my herb.; damp ground near pond, West Stoughton, Massachusetts, 23 Sept., 1911, Blake 3377; paratype, No. 4531, same data, in Gray Herb. Other specimens examined: Maine: Spruce Pond, Cornish, July, 1890 (*A. H. Norton*). Massachusetts: Malden, July 2, 1890 (*L. L. Dame*), and July 2, 1876 (*H. L. Moody*); ditch in woods, Norwood, 12 Oct., 1911 (*Blake* 3441). Connecticut: rare, in pond, Southington, July 12, 1899 (*L. Andrews* 820); ponds, Southington, July 12 and Aug. 18, 1899 (*Bissell* 881). Michigan: (no other data).

↔ ↔ Leaves smaller and narrower (main blade 10.5–20 cm. long, 3–5.5 cm. wide near middle); basal lobes shorter (2–7 cm. long), the lobes only rarely divergent.

5. P. virginica f. **brachyota**, n. forma.[2] Type sheet (in Gray Herb.): New Hampshire: Contoocook River, East Jaffrey, 6 Aug., 1898 (*W. Deane and B. L. Robinson* 574). Other specimens examined: New Hampshire: abundant in shallow water of river; East Jaffrey, 8 July, 1897 (*B. L. Robinson* 161 part). Massachusetts: Lynnfield, June 17, 1879 (*H. A. Young*); wet meadow around Doleful Pond, Stoneham, July 9, 1896 (*W. P. Rich*); sphagnum bog, Canton, 13

[1] P. virginica f. **hastifolia**, n. forma, foliis acutis vel acuminatis, lamina 10.5–23.5 cm. longa, 6–12 cm. lata, lobis basilariis angustis, (5)7–13 cm. longis, latitudine laminae saepe duplo longioribus, late divaricatis.

[2] P. virginica f. **brachyota**, n. forma, foliis minoribus, angustioribus, lamina 10.5–20 cm. longa, 3–5.5 cm. lata, auribus brevioribus, 2–7 cm. longis, raro divaricatis.

Sept., 1911 (*Blake* 3328); shallow water, Centerville, July 3, 1900 (*Mrs. C. I. Cheney*); Stockbridge, Aug. 20, 1902 (*R. Hoffman*). Delaware: Wilmington, June 1890 (*A. Commons*).

* * Leaves narrow (2.5–5 cm. wide), generally acuminate, with rounded, oblique or cordate base, the ears when present very short (1–2 cm. long) and unequal.

+ Leaves oblong or lance-oblong, acute or acuminate, 15.5–19 cm. long, 4.5–5 cm. broad; base oblique, rounded, or unequally and shortly eared.

6. P. virginica f. **heterophylla** (Raf.) n. comb.[1] *P. heterophyla* Raf. l. c. 88. *P. virginica* var. *heterophylla* Tidestrom, l. c. 49. According to Rafinesque, southern New Jersey and Delaware, also "even near Philadelphia in the Schuykill." Specimens examined: Massachusetts: sphagnum bog, Canton, 13 Sept. 1911 (*Blake* 3329 [leaves small, only 6.5–9 cm. long — perhaps not really this form]). Maryland: rare, Marshall Hall, June 22, 1905 (*Ivar Tidestrom*).

\+ + Leaves very narrowly lanceolate, long acuminate, 23.5–28 cm. long, 2.5–3.5 cm. wide; base oblique or rounded.

7. P. virginica f. **angustifolia** (Raf.) n. comb. *P. angustifolia* Raf. l. c. 89. *P. virginica* var. *angustifolia* Tidestrom, l. c. 50. "Virginia &c.," Rafinesque. Specimens examined: Maryland: rare, Nanjemoy Creek, June 1906 (*Ivar Tidestrom*).

Stoughton, Massachusetts.

Explanation of Plate 94.

Fig. 1. *Peltandra virginica* f. *latifolia* (Delaware, *Commons*. Not an extreme of the form).
Fig. 2. *P. virginica* f. *rotundata* (leaf from type sheet).
Fig. 3. *P. virginica* f. *hastifolia* (Michigan).
Fig. 4. *P. virginica* f. *brachyota* (leaf from type sheet).

(The three other forms were well figured by Mrs. Chase in Rhodora for March, 1910.)

[1] It may be well to mention that the youngest leaves of the seedling (as shown by sheets collected by Walter Deane on shore of "Glacialis," Cambridge, Massachusetts, May 20, 1894) are of this type, suggesting that it represents the primitive leaf-form in the species.

REPORTS ON THE FLORA OF THE BOSTON DISTRICT,—XV.

CYPERACEAE.

CAREX, O TO Z.

C. Oederi Retz. Swampscott (*C. W. Swan*, Aug. 5, 1886, specimen in herb. N. E. Botanical Club).

C. Oederi Retz., var. **pumila** (Cosson & Germain) Fernald. Salt marshes, meadows and shores, from Cambridge (1840) and Revere northeastward along the coast.

C. oligosperma Michx. Cold bogs and meadows, rare; Tewksbury, Bedford, Concord, Wellesley, Norfolk.

C. pallescens L. Fields and meadows, common throughout.

C. panicea L. Wet fields and meadows; well distributed except in extreme northern and western towns. "Cambridge, swamps on Mr. Norton's estate, June, 1838, E. T. Jr." [*Edward Tuckerman*].

C. pedunculata Muhl. Peabody (*J. H. Sears*, July 10, 1881); Shaker Glen, Woburn (*Wm. Boott*, May 14, 1865; *E. F. Williams*, May 12, 1895; *J. M. Greenman*, May 2, 1897; *W. P. Rich & E. F. Williams*, May 9, 1897); Fresh Pond, Cambridge (no data, specimen in herb. Bost. Soc. Nat. Hist.); Bussey's Mt., Jamaica Plain [W. Roxbury] (*E. & C. E. Faxon*, May 30, 1879).

C. pennsylvanica Lam. Dry sterile soil, very common throughout.

C. pennsylvanica Lam., var. **lucorum** (Willd.) Fernald. Wilmington, Burlington, Stoneham, Malden, Medford, Norwood, Milton, Halifax.

C. platyphylla Carey. Rich woods; Andover, Hamilton, Salem, Cambridge, W. Roxbury; Middlesex Fells, according to Deane, Fl. Metrop. Park Comm. 93, 1896; Hingham, according to T. T. Bouvé, The Botany of Hingham 132, 1893.

[In Dame & Collins, Fl. Middlesex Co. 118, 1888, this species is recorded from Medford, collected by C. E. Perkins. An examination of the specimen in the New England Botanical Club Herbarium shows it to be *C. laxiflora* Lam., var. *patulifolia* (Dewey) Carey.]

C. polygama Schkuhr. Swamps and meadows; frequent from Canton, Norwood and Framingham northward.

C. prasina Wahlenb. Wet banks of brooks in woods, rare; Newburyport, Medford, Winchester, Arlington, Belmont, Framingham.

C. Pseudo-Cyperus L. Lowell (*C. W. Swan*, July 5, 1880); big spring, Purgatory Swamp, Norwood (*G. G. Kennedy*, June 30, 1908).

C. ptychocarpa Steud. Purgatory Swamp, Norwood (various collections from June 23, 1879 to June 4, 1899); "near Boston" (*Wm. Boott*, no date, specimen in Gray Herb.).

C. retroflexa Muhl. Dry open woods; Boxford, Malden, Stoneham, Woburn, Newton, W. Roxbury, Dedham, Milton; Concord and Melrose, according to Dame & Collins, Fl. Middlesex Co. 119, 1888.

C. riparia W. Curtis. Swamps and stream-borders; occasional in central and northeastern portions.

C. rosea Schkuhr. Woods, common, but not reported from southeastern towns.

C. rosea Schkuhr, var. **radiata** Dewey. Andover (*A. S. Pease*, June 6, 1904, specimen in herb. A. S. Pease).

C. rosea Schkuhr, var. **minor** Boott. Shaker Glen, Woburn (*C. W. Jenks & C. W. Swan*, July 10, 1888); "Concord Turnpike" (*Wm. Boott*, June 10, ——).

C. rostrata Stokes. Bogs and wet shores; frequent in central portion; one station between N. Andover and Boxford, in Essex Co.

C. rostrata Stokes, var. **utriculata** (Boott) Bailey. Reported as frequent from Randolph and Norwood northward.

C. salina Wahlenb., var. **kattegatensis** (Fries) Almq. (var. *cuspidata* Wahlenb.). Brackish shores of Mystic River and Alewife Brook in Medford (*Wm. Boott*, June 13, 1853; June 13, 1858; May 29, 1870; *T. Morong*, June 25, 1878; *E. & C. E. Faxon*, June 26, 1879); Arlington (*Wm. Boott*, July 18, 1858; June 16, 1861); Arlington and Medford (*F. S. Collins*, July 8, 1887); Cambridge (*Wm. Boott*, July 10, 1859): brackish marsh, Newburyport (*F. F. Forbes*, June 13, 1903).

C. salina Wahlenb., var. **kattegatensis** (Fries) Almq. × **stricta** Lam. Medford (*Wm. Boott*, June 13 and June 20, 1858; *T. Morong*, June 25, 1877); Winchester (*Wm. Boott*, May 22, 1870); Arlington (*Wm. Boott*, June 18 and July 1, 1883; *F. S. Collins*, June 10 and July 8, 1887); Cambridge (*Wm. Boott*, June 11, 1858 and June 2, 1867; *E. Tuckerman*, no date). The Tuckerman specimen was

collected in wet swamps on Fresh Pond, and is in the Gray Herbarium. On the label in Francis Boott's handwriting is "C. vulgaris Fries." Tuckerman wrote on the label " 'very much like some of my foreign specimens of C. stricta.' Torr.! litt. C. stricta vera, fide Greene!" Carey has a long note on the sheet.

C. scabrata Schwein. Swamps, bogs and wet woods. Not reported from northwestern or southeastern towns; eleven scattered stations from Andover to Wrentham.

C. scirpoides Schkuhr. Swamps and meadows, occasional throughout.

C. scirpoides Schkuhr, var. **capillacea** (Bailey) Fernald. No reports from southeast, but frequent elsewhere.

C. scoparia Schkuhr. Open places, very common.

C. scoparia Schkuhr, var. **condensa** Fernald. Occasional in northern two-thirds of district, probably elsewhere.

C. scoparia Schkuhr, var. **moniliformis** Tuckerm. Ipswich (*K. M. Wiegand*, July 6, 1908); Cambridge (*E. Tuckerman*, no date); S. Sudbury (*M. L. Fernald, W. P. Rich* and *E. F. Williams*, June 17, 1902); Dedham (*C. H. Knowlton*, June 13, 1908).

C. seorsa E. C. Howe. Wet woods and swamps; Georgetown, Stoneham, Arlington, Acton, Stowe, Needham, Dorchester, Milton, Norwood, Canton, Randolph, Walpole.

C. setacea Dewey, var. **ambigua** (Barratt) Fernald. Dry open places; scattered stations throughout.

C. siccata Dewey. Dry sandy places; common in northern half; south of Boston and Framingham, reported only from Sharon.

C. silicea Olney. Sea-beaches and sand-dunes from Plum Island to Duxbury; also inland at Andover, Bedford, Concord and Readville [Hyde Park].

C. sparganioides Muhl. Rich woods, rare; Essex County (*Wm. Oakes*, no date); Oak Island, Revere (*H. A. Young*, June 1, 1879, July 9, 1882; *E. & C. E. Faxon*, June 10, 1879); Melrose (*H. A. Young*, June 5, 1879); Shaker Glen, Woburn (*E. F. Williams*, May 30, 1896); "Winchester (C. E. Perkins); Concord (E. S. Hoar); Malden (F. S. Collins)" according to Dame & Collins, Fl. Middlesex Co. 119, 1888 [The Concord specimen of Mr. Hoar's proves to be *C. muricata* L.]; occasional, Blue Hills and Middlesex Fells, according to Deane, Fl. Metrop. Park Comm. 94, 1896.

C. SQUARROSA L. N. Andover, one specimen only, between

Shawsheen and Merrimac, near Sutton's Mills Station (*J. Robinson*, Aug. 5, 1879); waste ground, Cambridge (*W. Deane*, June 27, 1887). Adventive from further west.

C. stellulata Good. Wet open ground, common.

C. stellulata Good., var. **angustata** Carey. Framingham (*E. C. Smith*, June, 1897); cedar swamp, Walpole (*C. H. Knowlton*, June 17, 1908.

C. stellulata Good., var. **cephalantha** (Bailey) Fernald. Many reports from central third of district.

C. stellulata Good., var. **excelsior** (Bailey) Fernald. Frequent from Stoneham, Wellesley and Natick south to Mansfield and Walpole.

C. sterilis Willd. Swamps, marshes and meadows; not reported from western third of district, but doubtless frequent throughout.

C. stipata Muhl. Swamps and wet meadows, common.

C. straminea Willd. Fields, woods and borders of brooks from Sherborn, Sharon and Milton northeast to West Newbury and Plum Island.

C. stricta Lam. Forming tussocks in wet places, very common.

C. stricta Lam., var. **angustata** (Boott) Bailey. Sixteen scattered stations in central part of district.

C. stricta Lam., var. **curtissima** Peck. Malden, Medford, Wilmington, Belmont, Milton, Westwood.

C. stricta Lam., var. **decora** Bailey. Occasional in central part of district.

C. tenella Schkuhr. Moist woods and wooded swamps; Billerica, Concord, Randolph, Dedham, Norwood, Canton, Walpole.

C. tetanica Schkuhr, var. **Woodii** (Dewey) Bailey. Open peat-bog, S. Sudbury (*M. L. Fernald, W. P. Rich & E. F. Williams*, June 17, 1902).

C. tribuloides Wahlenb. Moist fields and woods, frequent in northern half.

C. tribuloides Wahlenb., var. **reducta** Bailey. Cambridge, Belmont, Milton, Norwood, Wellesley or Dover; Mill Dam, Boston or Brighton (*Wm. Boott*, June 5, 1853).

C. tribuloides Wahlenb., var. **turbata** Bailey. Medford, Cambridge, Dedham, Canton.

[C. TRICHOCARPA Muhl. In Dame & Collins, Fl. Middlesex Co. 116, 1888, is the following reference to this species: "Concord (E. S. Hoar; specimen in herb. of); Ashland (Rev. Thos. Morong)." The

specimen collected by the late Edward S. Hoar is in his herbarium which has recently been presented to the New England Botanical Club by his daughter, Mrs. M. B. L. Bradford of Concord, Massachusetts. Examination proves it to be *C. vesicaria* L. The herbarium of Rev. Thomas Morong is in the Herbarium of the New York Botanic Garden at Bronx Park, New York City, and, through the kindness of Dr. J. K. Small, the Ashland plant has been examined and identified as *Carex hirta* L. It was collected in low, grassy ground, on June 30, 1877. I have in my herbarium specimens of *C. hirta* L. collected by Dr. Morong in Ashland, June, 1877, and labelled *C. trichocarpa* Muhl. This is probably of the same collecting as the specimen just referred to. Prof. L. H. Bailey wrote me in 1884 in regard to this plant, "An interesting find. It is *C. hirta* L..... I have not the species from this country, so I took a piece." I also have two specimens of *C. hirta* L. collected by Dr. Morong in Ashland, July 6, 1885. These Ashland plants have been recorded in Rhodora xiii. 250, 1911, under *C. hirta* L.

Prof. Bailey published a note on *C. hirta* L. in the Botanical Gazette for June, 1885, on page 295. He mentions its general resemblance to *C. trichocarpa* and says, "Introduced from Europe. Ashland, Mass., 1877, *Thos. Morong*; in ballast, Philadelphia, 1880, *F. L. Scribner*; and about Boston, *Wm. Boott*. Mr. Morong writes me as follows in regard to this species: 'I have collected it for several years in succession. I first found it by the roadside in rather low lands and afterwards in yards around dwellings, among grass. I presume from these situations that it must have been introduced into this locality.' " *Carex trichocarpa* Muhl. has been found in New England only in the western portions, while *C. hirta* L. has occurred at several stations in eastern Massachusetts (see Rhodora xii. 188, 1910). — W. Deane.]

C. trisperma Dewey. Swamps, meadows and wet woods; apparently frequent, but not reported from southeastern portion.

C. trisperma Dewey, var. **Billingsii** Knight. Wenham, Wakefield, Melrose, Tewksbury, Chelmsford, Littleton, Natick, Duxbury.

[C. Tuckermani Boott. In Dame & Collins, Fl. Middlesex Co. 115, 1888, is the following reference to this species: "Concord (E. S. Hoar, and specimen in Thoreau Herb.)." The herbarium of Edward S. Hoar, including the Carices, among other plants, collected by his intimate friend, Henry D. Thoreau, contains the specimens above

mentioned. The plant collected by Thoreau proves to be *C. rostrata* Stokes. The specimens collected by Mr. Hoar are *C. vesicaria* L., var. *monile* (Tuckerm.) Fernald. I have in my herbarium, a specimen of the same collecting, given me by Mr. Hoar. It, also, is *C. vesicaria* L., var. *monile* (Tuckerm.) Fernald. Mr. Hoar's label reads; "Concord, June 9, 1858. River meadows, very common," a statement well applying to *monile*, specimens of which I have from four separate stations along the Concord River in Concord, collected by Mr. Thoreau and Mr. Hoar. *Carex Tuckermani* is not known to occur in eastern Massachusetts.— W. Deane.]

C. umbellata Schkuhr. Dry sandy and rocky soil, frequent in eastern half of district.

C. umbellata Schkuhr. var. **brevirostris** Boott. Melrose (*G. G. Kennedy*, May 3, 1896).

C. umbellata Schkuhr, var. **tonsa** Fernald. Halifax (*A. S. Pease*, May 30, 1907).

C. varia Muhl. Dry woods and open places, common as far south as Milton and Norwood.

C. varia Muhl., var. **colorata** Bailey. Grassy bank, Wellesley (*K. M. Wiegand*, May 29, 1908); Mt. Chickatawbut, W. Quincy (*J. R. Churchill*, May 20, 1900); Halifax (*A. S. Pease*, May 30, 1907).

C. vesicaria L. Wet meadows, marshes and swamps, frequent.

C. vesicaria L., var. **jejuna** Fernald. Andover (*A. S. Pease*, June 9, 1903); Bedford (*J. Murdoch, Jr.*, June 7, 1902); Framingham (*E. C. Smith*, July 7, 1897); upper meadow, Milton (*J. R. Churchill*, July 17, 1898).

C. vesicaria L., var. **monile** (Tuckerm.) Fernald. Same range as the type.

C. vestita Willd. Sandy or gravelly soil in sun or shade, common.

C. vestita Willd., var. **Kennedyi** Fernald. Near Silver Lake, Wilmington (*G. G. Kennedy*, June 11, 1899). The type station, and the only station known. Published in Rhodora ii. 170, 1900.

C. virescens Muhl. Dry woods and open places, common in central portion.

C. virescens Muhl., var. **Swanii** Fernald. Common in central portion, extending north to Tewksbury and south to Walpole, Sharon, and Wrentham.

C. vulpinoidea Michx. Swamps and moist places, common.

C. Willdenowii Schkuhr. "Above the waterfall on the west side

of the path," Malden [now Melrose]. (*Wm. Boott*, June 11, 1863), also Malden [probably Melrose] (Wm. Boott, June 6, 1853); Arlington (*Wm. Boott*, June 6, 1853); dry woods, Ponkapaug, Randolph (*J. R. Churchill*, June 26, 1897). See Rhodora xii. 187, 1910.

C. H. Knowlton
S. F. Blake
J. A. Cushman
Walter Deane
} *Committee on Local Flora.*

THE ALGAE OF A MARSHY POND.

By A. B. Klugh, M. A.

On Barriefield Common near Kingston, Ontario, is a clay-bottomed marshy pond, whose algal flora is worthy of record because of its richness. This pond is only about 20 yards in diameter and is about $2\frac{1}{2}$ feet deep in the centre. The richness of this pond appears to me to be due to two causes; firstly that the pond never completely dries up, and I have it on the authority of Dr. Knight that during his long residence in Kingston he has never known it to be dry, and secondly that being shallow the water becomes warm during the summer. All the species mentioned below were collected either on July 21st or July 23rd, 1911. On the first occasion only one vial of material was collected, but on finding it so rich I returned on the 23rd and secured four more vials of material.

I wish here to thank Mr. F. S. Collins for his careful examination of such material from this pond as I sent him.

The species listed do not represent the entire algal flora of this pond as I found many species which were not in fruit and consequently not determinable with certainty.

The species marked with an asterisk are those which are here recorded from Canada for the first time.

Cyanophyceae.

**Aphanothece saxicola,* Naegeli. Common.

**Aphanothece microscopica,* Naegeli. Common.

Oscillatoria limosa, Agardh. Scarce.

Oscillatoria formosa, Bory. Scarce.

**Nostoc sphaericum,* Vaucher. Common.

**Anabaena catenula,* Bornet & Flahault. Fairly common.

Scytonema crispum, Bornet. Abundant, floating in great masses. The unbranched form only occurred.

**Tolypothrix tenuis,* Kuetzing. Common and intermingled with the preceding.

**Calothrix stagnalis,* Gomont. Common on *Scytonema crispum.* Young trichomes blue-green, older trichomes from pale blue to lilac in color. Three or four gonidia often present on one filament. Sheaths variable, usually thin but sometimes 3 microns thick.

**Rivularia pisum.* Agardh. Common.

**Rivularia natans,* Welwitsch. Common. Forming spherical colonies from $\frac{1}{2}$ to 3 mm. in diameter attached to water-plants.

Heterokontae.

Ophiocytium cochleare, A. Braun.

Ophiocytium parvulum, A. Braun.

Chlorophyceae.

**Zygnema pectinatum,* Agardh. Common and just beginning to conjugate.

**Spirogyra crassa,* Kuetzing. Scarce at border of pond.

**Mougeotia sphaerocarpa,* Wolle. Common.

Chlamydomonas communis, Snow. Common.

Gonium pectorale, Muller. Rare.

Pandorina morum, Bory. Common.

Characium naegelii, A. Braun.

Rhaphidium falcatum aciculare, Hansgirg.

Nephrocytium agardhianum, Naegeli.

**Tetraedron minimum,* Hansgirg.

**Tetraedron regulare,* Kuetzing.
**Tetraedron enorme,* Hansgirg.
Scenedesmus bijuga, Wittrock.
**Crucigenia rectangularis,* Gay. Rare.
**Elakatothrix americana,* Wille. Scarce.
**Coelastrum microporum,* Naegeli.
Sorastrum spinulosum, Naegeli. Common.
Pediastrum boryanum, Meneghini. Common.
Pediastrum tetras, Ralfs. Scarce.
**Cylindrocapsa geminella,* Wolle. Very common.
Chaetosphaeridium globosum, Klebahn. On *Cladophora fracta.*
**Gloiococcus mucosus,* A. Braun. Common.
**Gloeotaenium loitlesbergerianum,* Hansgirg. Both four-celled and two-celled forms of this species were present in the collections made both on July 21 and July 23. This is the first record for this species on the North American Continent, the only record previously published for the Western Hemisphere being from Trinidad.
**Cladophora fracta,* Kuetzing. Common.

Queen's University, Kingston, Ontario.

A BLUNT-SPIKED VARIETY OF CAREX SCOPARIA.

M. L. Fernald and K. M. Wiegand.

In eastern Newfoundland much of *Carex scoparia* so strongly resembles *C. tribuloides,* var. *turbata* in its slightly flexuous elongate head of subturbinate almost flat-topped spikes that, when the plant was first brought to notice during the past summer, by Mr. E. B. Bartram who was collecting with us, we were inclined to class it as a form of *C. tribuloides.* But the plant, which afterward proved to be generally distributed in eastern Newfoundland has the narrow leaves, close sheaths and the straw-colored or brownish somewhat lustrous spikes of *C. scoparia,* and is clearly an extreme of that species. Examination of all the material in the Gray Herbarium and the herbarium of the New England Botanical Club — about 250 sheets — shows that

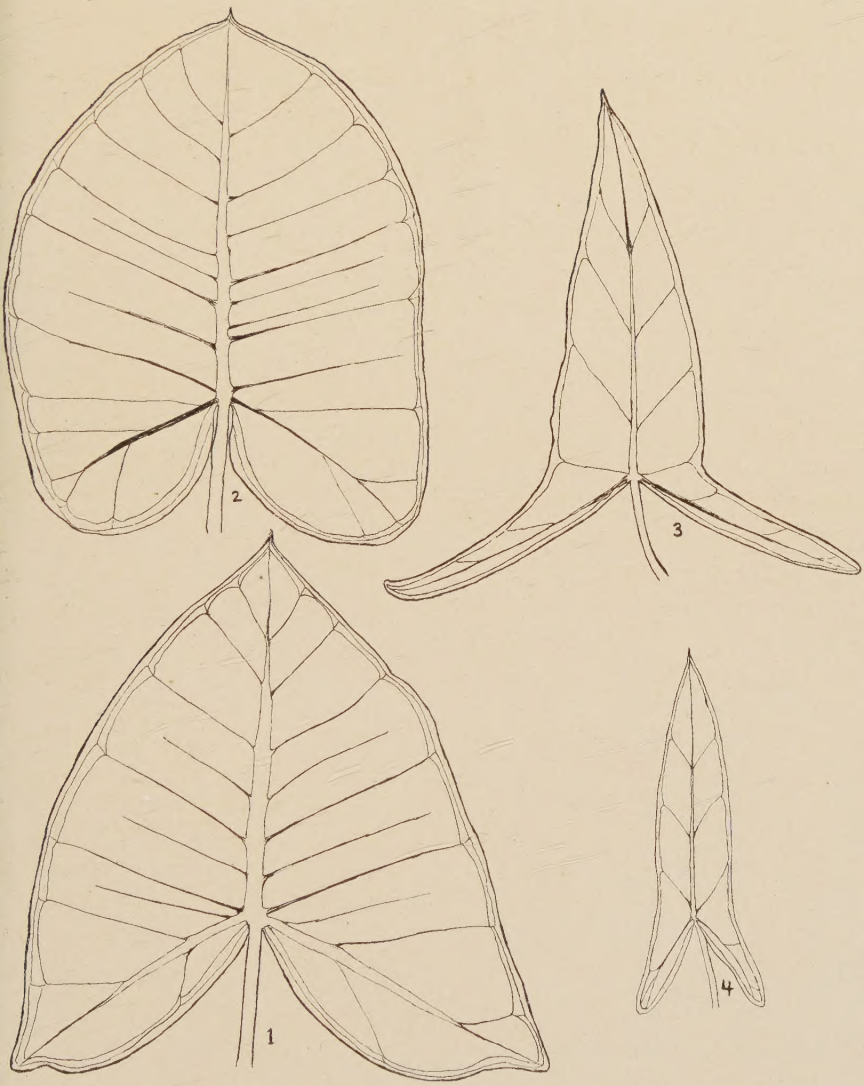
the species and ordinarily recognized varieties have the spikes acute (at least when young) and more or less rhomboid-fusiform, thus strongly contrasting with the blunt or subtruncate obovoid spikes of *C. tribuloides*. In the large suite of material which we have examined there are a few specimens which are clearly like the blunt-spiked plant of Newfoundland and which indicate that this extreme is widely distributed, though apparently rare on the continent of North America. That it may be readily cited we propose to call it: —

Carex scoparia Schkuhr, var. **subturbinata**, var. nov., var. moniliformi habitu statura etc. simile; inflorescentiis elongatis subflexuosis; spicis subremotis obovoideis vel subturbinatus obtusis vel subtruncatis.

Similar in habit, stature, etc. to var. *moniliformis*: inflorescences elongate, subflexuous; spikes subremote, obovoid or subturbinate, obtuse or subtruncate. — Type collected in a wet ditch along the railroad near Rushy Pond, Newfoundland, August 28, 1911, *Fernald & Wiegand*, no. 4796. Also examined from the following stations. Newfoundland: open swale, river-flat, Grand Falls, July 18, 1911, by a pool on sandstone ledges, Grand Falls, July 22, 1911, low open stony ground along a brook, and in a wet ditch along the railroad, Brigus Junction, August 5, 1911, *Fernald & Wiegand*, nos. 4792, 4793, 4794, 4795. Nova Scotia: Metaghan, July 22, 1896, *E. Brainerd*. Michigan: Tawas Point, June 22, ——, *H. Gillman*. Tennessee: low wet places, Henderson, May 13, 1893, *S. M. Bain*, no. 500.

Prize Essay. — We are asked to call attention to two prizes, of $25.00 and $15.00, offered by the Torrey Botanical Club for the best popular article on some feature of the vegetation in the neighborhood of New York (including the State of Connecticut). For details those interested should communicate promptly with Mr. Norman Taylor, Central Museum, Eastern Parkway, Brooklyn, N. Y.

Volume 14, no. 161, including pages 81 to 96, was issued 1 May, 1912.



S. F. Blake del.

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